

## Claims

1. Structured mixing shaft (1) for thorough mixing and comminution of food products in an assembly (2) characterized in that the structured mixing shaft (1) having a steel core (3) exhibits a coating (6) with mixing elements (4).
2. Mixing shaft according to claim 1 wherein the coating (6) is a poly- tetra fluoro-ethylene (PTFE) and covers the complete mixing shaft (1).
3. Mixing shaft according to claim 1 wherein the steel core (3) is made of stainless steel.
4. Mixing shaft according to claim 1 wherein an elongated section (7) is furnished, and wherein a flange (8) is arranged at one end of the elongated section (7).
5. Mixing shaft according to one of the preceding claims wherein mixing elements (4) are disposed at predetermined distances (A) on the elongated cylindrical section (7).

6. Mixing shaft according to claim 5 wherein the distances (A) are furnished irregular.
7. Mixing shaft according to one of the preceding claims wherein the cylindrical elongated section (7) is disposed in an elongated product chamber (9).
8. Mixing shaft according to claim 6 wherein at least one injection nozzle (11) is disposed at the product chamber wall (10).
9. Mixing shaft according to one of the preceding claims wherein the plastic coating (6) is pressed on isostatically at high pressures, then is sintered at high temperatures and in the following worked by metal cutting and machining away.
10. Mixing shaft according to one of the preceding claims wherein the surface of the plastic coating (6) is polished.
11. Mixing shaft according to one of the preceding claims wherein the complete surface of the steel core is roughened.

12. Mixing shaft according to one of the preceding claims wherein the plastic coating (6) is sintered at temperatures from about 360 degrees centigrade to 380 degrees centigrade after the isostatic pressure application.

13. Mixing shaft according to one of the preceding claims wherein the mixing elements (4) are a component of the coating (6).

14. Mixing shaft according to one of the preceding claims wherein the cylindrical section (7) of the steel core (3) of the mixing shaft exhibits elongated grooves (12) and elongated projections (13), wherein the corners (14) and the edges (15) of the elongated grooves (12) and of the elongated projections (13) are formed rounded.

15. Mixing shaft according to one of the preceding claims wherein the widths of the grooves and of the projections (13) are of approximately equal size.

16. Method for the production of a coating (6) on the surface of a steel core (3) of a mixing shaft (1) for thorough mixing and comminution of food products in an aggregate (2) with the aid of a processing method known in principle for the application of poly- tetra fluoro- ethylene onto surfaces characterized in that a

coating (6) with the mixing elements (4) is applied onto the structured surface of the steel core (3) at isostatic pressure (p) and at increased temperatures (T).

17. Method according to one of the preceding claims wherein the plastic coating (6) is pressed on isostatically at high pressures, then sintered at high temperatures, and then in the following worked by machining away and metal cutting.

18. Method according to one of the preceding claims, wherein the plastic coating is pressed on with an isostatic pressure of about 300 bar to 350 bar onto the steel core (3) of the mixing shaft (1).

19. Method according to one of the preceding claims, wherein the plastic coating (6) is pressed on isostatically at high pressures, then is sintered at high temperatures and in the following worked by metal cutting and machining away.

20. Method according to one of the preceding claims wherein the plastic coating (6) is sintered at about 360 degrees centigrade to 380 degrees centigrade after the isostatic pressure application.